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The Effects of Social Characteristics of Iranian Households on Food Consumption Expenditures

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By using the household data on food consumption, income and other social indicators including activity status, age, literacy, place of residence employment, and marital status, this paper aims to investigate the transitory impact of temporary and permanent income shocks on food consumption in Iran over the period 2009-2014. To study the deterministic effects of the household on food consumption and income, firstly, an Ordinary Least Squares (OLS) method is used to estimate the impact of some Iranian social characteristics on households' income and food consumption. Then, the variance–covariance structure of income and food consumption processes is utilized, which has described by the Permanent-Temporary model (PT) to identify the characterizing parameters, which link the behavior of consumption and income to estimate the consumption-smoothing parameters. The results indicate that there is nearly complete food consumption smoothing against temporary and permanent income shocks throughout the sample period. Moreover, households' social indicators have significant effects on their food consumption, income levels, and insurance opportunities.

Keywords: Temporary and Permanent Income Shocks, Household Consumption, Covariance Constraints, Consumption Smoothing, Complete Insurance
JEL Classification: D12, D91, I30

1 Introduction

Based on the household consumption theory, rational households tend to plan their periodic decision-making processes close to expected incomes throughout their lifetimes and through using different smoothing mechanisms; they maintain their consumption consistently with income changes (Notten and Crombrugghe, 2012). Over the past few years, extensive theoretical and empirical literature done on the impact of household income shocks has shown that households can use home-grown revenues, increase job delivery, or create a second job (risk management strategies) to smooth their income before a shock. It is also possible to smooth out their consumption aftershocks through savings and wealth, loans, or assistance from the official market or social

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networks such as family members, friends, charities, etc. (risk coping strategies) (Sirisankanan, 2015). Also, in most developing countries, households sometimes have to deal with economic and exogenous shocks due to inadequate information, liquidity limitation, and lack of access to the mentioned mechanisms. In other words, one way that households respond to income shocks is by adjusting the intensity of consumption of some goods and services in favor of consuming other goods (Dutt and Padmanabhan, 2011).

The main study of this paper is to investigate the degree of transmission of temporary and permanent income shocks on food consumption in Iran over the period 2009-2014, using the household-level data on both food consumption and income as well as the other social characteristics, including age, education level, place of residence employment ,and marriage status.

The paper is organized as follows: after the introduction, section two provides a brief literature review, section three presents the methodology for the specifications and data sources, section four includes model estimation. Finally, section five concludes the paper.

2 Literature Review

2.1 Theoretical Basis

Empirically and based on usual methods in existing literature, one can be able to explain the effect of household income shocks on the consumption of households in the following three ways (Jappelli and Pistaferri, 2010). A first method is a quasi-experimental approach based on a comparison between households exposed to income shocks and households who not exposed to it. In other words, here is a comparison of household consumption before and after income shocks, such as illness, job loss, disability, etc. (Browning & Grossley, 2003). The second method is Subjective Expectations which is based on setting up a questionnaire for collecting information from households on their expectations of continuity income shocks and based on this information, temporary and permanent shocks are identified. Finally, the third method is the analysis of Statistical Decomposition of Income Shocks in which income shocks are divided and examined into temporary and permanent components through using time-series techniques. Blundell et al. (2008) used Autoregressive Moving-average Model (ARMA) for time series and panel data that includes income information and food expenditure. They also used social indicators of households such as age, gender, education, activity status, marital status, and obtained the parameters of temporary and permanent income shocks such as deviations from income that affects consumption

through applying covariance constraints between consumption and income changes. The above method has been used in studies by Cassado (2011) and Hollweg (2014) to examine the amount of temporary and permanent shocks transferred to consumption expenditure in Spanish and Australian households, respectively.

The ability of households to smooth their consumption against income shocks also depends on the degree of continuity of the shock (i.e. temporary (predicted) or permanent), the extent of development and efficiency of formal and informal mechanisms in smoothing income and consumption or to the type of income shock whether the shock that has happened is for a particular household or the whole community. The household's impact on income shocks is also influenced by some social indicators (household characteristics) such as wealth, education, place of residence, number of household members, etc. to investigate the effect of household income shocks, three important hypotheses can be mentioned. The first hypothesis is a complete market hypothesis in which households have full access to formal financial and credit markets to smooth their consumption against income shocks. According to this hypothesis, temporary and permanent shocks are expected to be completely smoothed and insured (Cassado, 2011). The second hypothesis is known as risk sharing hypothesis in which households can take insurance on each other with different types of shocks, regardless of the type of shock, whether temporary or permanent, positive or negative, (Cochrane, 1991) and Townsend (1995). In this hypothesis, shocks happened to household income can be absorbed by society. In the way that household consumption in this community does not show any response to income changes. In a society where risk sharing has taken place, the benefits of a general boom will come to each member of the society, and the growth rate of the marginal utility for households in this community is the same. Income shocks are only effective in a way that is inclusive and out of control of the community. Under such a condition, the power of households is reduced in sharing the risk.

The third hypothesis was proposed by Friedman (1957) under the title of Permanent Income Hypothesis (PIH). Among the consumption theorists, he is the first economist to focus on income shocks. The main theme of this hypothesis, which is the basis of most empirical studies carried out in this area, is that household income is divided into two components: permanent and temporary. There are correlations between permanent components of consumption and income, but their temporary components are not correlated. Therefore, this is the only permanent change in income that affects household consumption. Households can be insured on temporary shocks by saving or

borrowing. But in the long run, households cannot borrow. Thus, household consumption growth is only a function of permanent income and shows no response to predicted and temporary income shocks (Shirvani and Wilbratte, 2009).

2.2 Empirical Studies

In the following, the most important empirical studies on the effects of temporary shocks divided into temporary and permanent income shocks on household consumption by using various methods that have been taken are presented:

Bilgili (2007) examined the effects of permanent and temporary shocks on private sector consumption in Turkey economy during 1987-2006, using a pattern of VAR and Blanchard-Kwa (1989). Their results showed that permanent income shocks lead to a high share of consumption variance.

Blundell et al. (2008a, 2000b) suggested a temporary-permanent income model in which variation of consumption variance correlates with variance changes of each of the permanent and temporary income shocks and argued that the parameters associated with these shocks are the level of household insurance coverage for income shocks; as is called "partial insurance" by Blundell. In other words, their model is, in fact, an explanation of the level of household consumption smoothing versus components of income shocks. Blundell et al. (2008b), using data from the data panel on American household income and food expenditure consumption, concluded that partial insurance for household consumption against permanent shocks, especially among groups with high education levels and also full insurance against temporary shocks, except for low-income households, exist for the rest of the groups.

Huang et al. (2008), using Innovation Regime-switching Model (IRS), sought to derive permanent and temporary shocks from disruptive personal income and examined their effect on household consumption expenditures in the United States over the period 1959 to 2006. Their findings indicated that consumption is significantly lower than expected for permanent shocks and equals to the predicted levels of temporary income shocks in Friedman's permanent income hypothesis.

Shirvani and Wilbratte (2009) examined the effects of temporary and permanent shocks on total consumption during 1980-2005 for five industrial countries (Canada, France, Italy, the United Kingdom, and the United States). They used the multivariate stochastic De-trending Approach (MSDA) to split variables into a random process (permanent component) and a cycle (temporary component). They also used the Dynamic Least Squares (DOLS)

method to examine the effect of permanent and temporary income shocks on the consumption in five studied countries. The obtained results showed that consumption is affected by the permanent component of income and has no correlation with its temporary component. So that behavior of consumption in these five industrialized countries is consistent with the permanent income hypothesis.

Kaplan and Violante (2010) studied the degree of consumption smoothing implicit in a calibrated life-cycle version of the standard incomplete-market model, and compared it to the empirical estimates of Blundel, Pistaferri and Preston (2008) on U.S. data. They found that American households in the data have accessed to more consumption insurance against permanent earnings shocks than in the model.

Attanasio and Pavoni (2011) have also shown significant life insurance in the life-cycle model of insurance against permanent income shocks for British households

Cassado (2011) has estimated the rate of temporary and permanent shocks on consumption from 1989 to 1995, using data from the panel on income and food consumption expenditure of Spanish households. The findings of this study indicated that full insurance for temporary shocks and insufficiency (partial) insurance for permanent shocks exist for some household items. Using panel data of income and food expenditure for Australian households over the period 2001-2009. Hollweg (2014) has also examined the amount of temporary and permanent shocks of household income against food consumption and achieved the results that there is almost a complete insurance for food consumption for temporary shocks. Meanwhile, consumption is less secured against permanent shocks.

Bani Asadi. M. & Mohseni, R. (2014) examined the effect of temporary and permanent shocks of productivity on the intensity of energy consumption in Iran over the period 197402010, using Blanchard-Quah method. The results of model estimation showed that temporary shocks of productivity are the main source of short –term changes in energy intensity. Also, the permanent shocks of productivity will lead to reducing energy intensity in the long-run.

Kukk et al. (2016) investigated the effect of permanent and temporary income shocks on the consumption of households in Estonia, using the data of the household's budget questionnaire over the period 2002-2007. Their purpose in this analysis was to identify and analyze the permanent and temporary incomes of each other. The results indicated that household consumption is more likely to respond to permanent income shocks, and temporary income shocks do not have much effect on consumption changes.

Mowlaei and Ali (2016) examined the effect of the temporary and permanent income shocks on Iranian household's consumption and using Blanchard-Quah method. The results of estimated model confirm the validity of permanent income hypothesis (PIH) in Iran. So that household consumption almost entirely explained by permanent shocks income, but it does not show sensitively to temporary shocks.

Mowlaei and Ali (2018) investigated the effect of economic shocks on the consumption of Iranian households over the period 1974-2014, using ARDL method. They found that there was a positive and significant relationship between household consumption; temporary and permanent income and money shocks, but there is a significant and negative relationship between household consumption and permanent government spending shocks in Iran.

Not study has directly examined the effect of insurance rate on food consumption expenditures for temporary and permanent shocks for Iranian households. The most studies have used econometric methods and techniques to estimate the consumption function or final consumption in terms of Keynesian, Friedman, and Modigliani hypotheses. These studies include Zarra-Nezhad (2003),

Fakhraei and Mansouri (2010), Roshan et al. (2013), Yazdan and Sina (2013), Zarra-Nezhad et al. (2011). Other studies have been carried out in this field (Emami and Darbani, 2011), in which the factors affecting consumption expenditure of households have been investigated.

By summarizing the findings, it can be argued that a limited number of studies have been carried out on assessment of transmission of income shocks, separated as temporary and permanent, on household consumption expenditures, and especially food commodities abroad. In Iran, due to occurrence of significant economic changes since 2009, such as a surge in energy prices, oil and banking sanctions, exchange rate fluctuations, and the entry of various economic sectors into a stagnant and negative growth, there is not a direct analyze on the survey and identification of household consumption insurance rates for shocks. Hence, doing this study for Iran is important and can provide a theoretical basis for further studies. The contribution of this paper is following the study of Blundell et al. (2008) and by using panel data that includes income and food expenditure data for Iranian households and social indicators of households such as age, gender, education, activity status, marital status; the rate of food consumption insurance for temporary and permanent income shocks over the period 2009-2014 is investigated.

3 Methodology and Data

3.1 Methodology

The purpose of the present study is to investigate how permanent and temporary shocks are transferred to household consumptions, which is called "Partial insurance parameters" in a study by Blundell et al. (2008). In this model, by allowing changes in the variance of permanent and temporary shocks over time, the rate of change in the sustainability of income shocks is made possible. Suppose that the logarithm of the real household income at time t is displayed with $\log Y_{i,t}$ and depends on some dummy components $Z_{i,t}$, a constant component $P_{i,t}$ and a temporary income component $v_{i,t}$:

$$\log Y_{i,t}=Z_{i,t}\phi_i+p_{i,t}+v_{i,t} \quad (1)$$

It is assumed that the permanent component of $p_{i,t}$ follows a random Martingale process:

$$p_{i,t}=p_{i,t-1}+\zeta_{it} \quad (2)$$

That ζ_{it} is serially non-correlated. It is assumed that the temporary component $v_{i,t}$, follows from a moving average of the order of q:

$$v_{i,t}=\sum_{j=0}^{q}\theta_j\epsilon_{i,t-j} \quad (3)$$

Therefore, income changes during t and t-1 are equal to:

$$\Delta y_{i,t}=\zeta_{it}+\Delta v_{i,t} \quad (4)$$

That $y_{i,t}=\log Y_{i,t}-Z_{i,t}\rho_t$ is the net income of dummy components (education, employment, gender, marital status, and the age of the head of household). Following the study of Blundell et al. (2002, 2008), and then the study by Cassado (2011) to measure how income shocks transfer to consumption, the change in the actual consumption logarithm derived from the linear approximation of Euler equation which is obtained from maximizing desirability of the household according to its budget constraint is defined as follows:

$$\Delta c_{i,t}=\phi_i\zeta_{it}+\psi_i\epsilon_{i,t}+\xi_{i,t} \quad (5)$$

That $c_{i,t}=\log C_{i,t}-Z_{i,t}\rho_t$ is purified consumption of dummy components (age, gender, ...) and $\xi_{i,t}$ is a disruptive segment of consumption and independent of

income (e.g., a shock of preferences). φ_i and ψ_i parameters are called consumption smoothing parameters, and these parameters indicate the degree of transition of permanent and temporary shocks to household consumption. So that:

If ($\Phi_{i.t}=\psi_{i,t}=0$), there is a full smoothing against both temporary and permanent shocks. If ($\Phi_{i.t}=\psi_{i,t}=1$): There is no smoothing consumption. If ($0<\Phi_{i.t}<1$ and $0<\psi_{I,t}<1$): for other modes and the closer the parameters to zero, the higher the degree of insurance is showing. By assuming $\xi_{i,t}$ is static, changes in the variance of consumption growth can be analyzed as follows:

$$Var(\Delta c_t)=Var(\zeta_t)\Delta\phi^2+\phi^2\Delta Var(\zeta_t)+Var(\epsilon_t)\Delta\psi^2+\psi^2\Delta Var(\epsilon_t) \quad (6)$$

Equation (6) shows that the variance of consumption growth can be changed due to the reduction of the degree of consumption smoothing (increase in insurance parameters) compared to income shocks or because of the increased variance of income shocks. However, since the period of this study is short, it is assumed that insurance parameters do not change over time. Assuming that these parameters are stable, and given that households do not have full smoothing consumption against shocks, it can be concluded that the growth of consumption variance can increase as a result of increased permanent and temporary shocks (Hori and Shimizutani, 2012).

To identify model parameters, covariance constraints are imposed on consumption and income growth. In Blundell approach, consumption is allowed to have a measurement error. Suppose c_{it}^* is measured consumption, and c_{it} is the real amount of consumption:

$$c_{it}^*=c_{it}+u_{it} \quad (7)$$

In which, u_{it} is a measurement error of consumption. Assuming that consumption follows a Martingale process, the measurement error may lead to self-dependence on consumption growth.

It is assumed that the processes $\xi_{i,t}$, ζ_{it} and $v_{i,t}$ are non-correlated two-by-two. According to papers by Hall and Mishkin (1982) and other researchers, it is possible to identify parameters in equations 4 and 5 by applying covariance constraints. Given the equation (4), the following constraints can be imposed on variables:

$$\operatorname{cov}\left(\Delta y_t,\Delta y_{t+s}\right)=\begin{cases} \operatorname{var}\left(\zeta_t\right)+\operatorname{var}(\Delta v_t) & s=0 \\ \operatorname{cov}(\Delta v_t,\Delta v_{t+s}) & s\neq 0 \end{cases} \quad (8)$$

In which var (.) and cov (.) show the cross-sectional variances and covariance (variance and covariance of variables in cross-sectional units). Equation (8) shows that inequality of income (that is obtained by placing s = 0) may be due to an increase in the variance of continuous income shocks or due to the increased variance of temporary shocks.

The covariance of Δv_t and Δv_{t+s}depends on the self-correlation structure of $v_{i,t}$. If v follows a moving average process of q, then cov (Δv_t, Δv_{t+s}), when |s|>q+1 | is equal to zero. Also, if v is not correlated serially ($v_{it} = \varepsilon_{it}$), the variance of Δv_t is equal to the sum of variances of ε_t and ϵ_{t-1}. In this study, the temporary component of income is assumed to follow an MA (1) process. Under this assumption, the following constraints exist between covariance of income growth:

$$\operatorname{cov}\left(\Delta y_t,\Delta y_{t+s}\right)=\begin{cases} \operatorname{var}\left(\zeta_t\right)+\operatorname{var}(\epsilon_t)+(1-\theta)^2\operatorname{var}(\epsilon_{t-1})+\theta^2\operatorname{var}(\epsilon_{t-2}) \\ -(1-\theta)\operatorname{var}(\epsilon_t)+(1-\theta)\theta\operatorname{var}(\epsilon_{t-1})-\theta\operatorname{var}(\epsilon_t) \\ 0 \end{cases} \quad (9)$$

Accordingly, with the same approach, the covariance constraints of consumption growth in different interruptions are defined as follows:

$$\operatorname{cov}\left(\Delta c_t^*,\Delta c_{t+s}^*\right)=\begin{cases} \phi^2\operatorname{var}\left(\zeta_t\right)+\psi^2\operatorname{var}(\epsilon_t)+\operatorname{var}\left(\xi_t\right)+\operatorname{var}(u_t)+\operatorname{var}(u_{t-1})-\operatorname{var}(u_t) & s=0 \\ & s\neq 0 \end{cases} \quad (10)$$

In which, var (u_t) is the variance of the measurement error. Due to the assumption that the consumption is a martingale, the variance of the measurement error can be determined using the first-order auto-covariance in the growth of consumption (because each serially self-correlation is related to a disruptive segment). This relationship shows that inequality of consumption can occur for three reasons: 1.Decrease in the degree of insurance about income shocks (for certain variances) 2. Increase in the variance of income shocks (for the specified insurance amount) and 3. Increase in consumption measurement error. By using (4) and (5), the covariance constraint between income growth and consumption in different interruptions is equal to:

$$\operatorname{cov}\left(\Delta c_t^*, \Delta y_{t+s}\right)=\begin{cases}\phi_t \operatorname{var}\left(\zeta_t\right)+\psi_t \operatorname{var}\left(\varepsilon_t\right) & s=0 \\ \psi_t \operatorname{cov}\left(\varepsilon_t, \Delta v_{t+s}\right) & s>0\end{cases} \quad (11)$$

If v is a moving average process of the order of q, then $\operatorname{cov}\left(\Delta c_t, \Delta y_{t+s}\right)$ is zero when $|s|>q+1$. | Also, if v is not correlated serially ($v_{i,t}=\epsilon_{i,t}$), the variance Δv_t is equal to the sum of ϵ_t and ϵ_{t-1}variances. Also, if v is serially not correlated ($v_{i,t}=\epsilon_{i,t}$), so $\operatorname{cov}(\Delta v_t,\Delta v_{t+s})=-\psi_t \operatorname{var}(\varepsilon_t)$ for s = 1 and otherwise the covariance of two sentences will be zero. Given the existence of the first-order moving average in temporary income shocks, the covariance constraints between consumption growth and income will be as follows:

$$\operatorname{cov}\left(\Delta c_t^*, \Delta y_{t+s}\right)=\begin{cases}\phi_t \operatorname{var}\left(\zeta_t\right)+\psi_t \operatorname{var}(\varepsilon_t)-\psi(1-\theta) \operatorname{var}(\epsilon_t)-\psi \theta \operatorname{var}(\epsilon_t) \\ 0\end{cases} \quad (12)$$

3.2 Data Sources

To estimate the effects of permanent and temporary income shocks on household consumption, several data sets have been used. First, calculating panel data, including urban and rural households over the period 2009-2014, by the data which has been published by the Statistical Center of Iran in different years. Then the social indicators of households such as age, gender, education, activity status, marital status, etc. have been collected. However, for some people, the sample did not contain all the variables required for this study, so only the available statistics were used. The variables of income and food expenditures are calculated by real values (constant 1390=100).

4 Model Estimation

4.1 Auto-Covariance of Income and Food Consumption

Using the dummy factors from household's income and consumption, these variables were first, regressed based on age, gender, educational status, marital status, the status of the activity of the head of household, and the residential place. Table (1) shows the studied social indicators of households in Iran.

Table 1
The social indicators of households in Iran

The Dummy Variable of the Status of the Head of Household	
Employed	4
Unemployed	3
Income Without Job	2
Student	1
Housewife	0
The Dummy Variable of Education of the Head of Household	
Literate	1
Otherwise	0
The Dummy Variable of the Gender of the Head of Household	
Male	1
Otherwise	0
The Dummy Variable of the Marital Status of the Head of Household	
Married	3
Widowed	2
Divorced	1
Single	0
The Dummy Variable of the Residential Status of the Head of Household	
urban	1
village	0
The Dummy Variable of the Age of the Head of Household is measured by year	

Source: Research Calculations.

The effects of studied variables on households' income are presented in table 2.

Table 2
Regression of Dummy Components on Income

Variable	Coefficient
Marital Status	0.07* (6.80)
Activity Status	0.15* (27/94)
Literacy Status	0.35* (32.97)
Age	0.008* (2.66)
Gender	0.17* (8.95)
Residential place	0.83* (9.02)
Intercept	15.73* (425.1)
R^2=0.66 F =2767.696 (0.0000)	
Number of Observations=118390	

Robust t-statistics in parentheses. *significant at 1%.
Source: Research Findings.

Table (2) shows that all variables have a positive and significant effect on household income. The positive sign on gender variable indicates that the male head of household earns a living more than female, which can justify gender pay discrimination. The literacy of the head of household has a positive and significant effect on household income. The more the activity status variable, the lower is the household income; this means that households whose head works are in a better situation than other classes. The positive sign of marital status also indicates that married people have earned more income than singles. The positive sign of the variable of the residence also means that urban households have higher income levels than rural ones.

Table (3) shows the results of the regression of dummy components on food expenditures of households.

Table 3
Regression of Dummy Components on Food Expenditure of Households

Variable	Coefficient
Marital Status	0.09* (11.25)
Activity Status	0.08* (18.92)
Literacy Status	0.27* (32.71)
Age	0.04* (53.3)
Gender	0.07* (5.03)
Residential place	0.43* (73/95)
Intercept	12.78* (456.42)
R^2=0.67 F= 3398.511 (0.0000)	
Number of Observations=118390	

Robust t-statistics in parentheses. *significant at 1%.
Source: Research Findings.

According to Table 3, the effect of all dummy components on food expenditure of households are significant. The interpretation of the coefficients is similar to how they are interpreted in income regression. For example, the positive impact of education means that educated households have more food consumption than illiterate households.

To estimate the effects of permanent and temporary income shocks on household consumption, the residual of these regressions are extracted and analyzed. In Table 4 some income growth components are presented. Income components provide some information on how the income distribution is transferred, as well as the permanent or temporary nature of such a transfer. According to Table 4, the household income growth variance increased in 2011 and 2012 compared to 2010, while in the years 2013 and 2014 the variance of household income growth has decreased in the country. According

to these calculations, the first-order auto-covariance of household income growth has been negative in all of the studied years. This means that if in one year the income growth is positive, it is expected that in the following year, they will experience negative income growth. However, the first-order covariance between t and t + 1 in terms of absolute magnitude is higher in 2011 than in other years. The second-order auto-covariance of income (which contains some information about temporary shocks based on equation 6 on self-correlation) is small and only is statistically significant in 2012. Accordingly, MA (0) process is more appropriate than MA (1) for temporary income component. Nevertheless, for compatibility with the discussion of Blundell et al. (2008), the structure of MA (1) is considered for temporary income components in this study.

Table 4
Auto-Covariance of Income Growth Matrix (Net Income Growth of Dummy Components)

Year	Var (ΔY_T)	Cov (ΔY_T,ΔY_{T+1})	Cov (ΔY_T,ΔY_{T+2})
2010	2.4	-1.23* (0.0000)	-0.023 (0.173)
2011	3.58	-2.47* (0.0000)	-.0.024 (0.165)
2012	3.421	-0.88* (0.0000)	-0.077* (0.006)
2013	1.765	-0.87* (0.0000)	-
2014	1.758	-	-

P-value in parentheses. *significant at 1%.
Source: Research Findings.

Although income moments contain information on how to distribute income, nothing can be deduced from any inference regarding how the transfer is distributed in consumption. For this reason, moments of consumption and consumption-income have to be used. These moments are calculated in Tables 5 and 6. Table 5 shows that the variance in the growth of household food expenditure consumption increased sharply in 2011 compared to 2010, and then had a downward trend.

Table 5
Variance and Auto-Covariance Matrix of Food Consumption

Year	Var (ΔY_T)	Cov (ΔY_T,ΔY_{T+1})	Cov (ΔY_T,ΔY_{T+2})
2010	0.767	-0.368* (0.0000)	-0.002 (0.001)
2011	2.76	-0.27* (0.0000)	-0.271 (0.0000)
2012	0.355	-0.058* (0.0000)	-0.28 (0.333)
2013	0.557	-0. 004* (0.0000)	-
2014	0.506	-	-

P-value in parentheses. *significant at 1%.
Source: Research Findings.

The first-order covariance of food consumption for households is negative every year. This means that there has been a negative correlation between income growths within two years. Table (6) shows the growth of covariance for food expenditure and income.

Table 6
Growth of Covariance for Food Expenditure and Income

Year	Cov(ΔY_T,ΔC_{T+1})	Cov(ΔY_{T+1},ΔC_T)	Cov(ΔY_{T+2},ΔC_T)	Cov(ΔY_T,ΔC_T)
2010	0.09* (0.0000)	1.16* (0.0000)	0.056* (0.0000)	**0.24* (0.0000)**
2011	0.284* (0.0000)	1.65* (0.0000)	0.008* (0.0000)	**1.54* (0.0000)**
2012	-0.18* (0.0000)	0.88* (0.0000)	-0.08* (0.0000)	**0.27* (0.0000)**
2013	-0.09* (0.0000)	0.1* (0.0000)	-	**0.08* (0.0000)**
2014	-	-	-	**0.185* (0.0000)**

P-value in parentheses. *significant at 1%.
Source: Research Findings.

According to table 6, $\mathrm{cov}(\Delta y_t, \Delta c_{t+1})$ reflects the relationship between future consumption growth and current income growth. Based on the results of Table 6 in 2010, and 2011, there is a positive and significant correlation between the growth of current income, and the growth of food consumption and in 2012 and 2013 this correlation has been reversed.

In analyzing temporary and permanent income shocks and estimating insurance parameters, it is assumed that the variance of permanent and temporary income shocks varies over time, but the consumption smoothing parameters are constant. A process of MA(1) is assumed for temporary shocks $v_{i,t}=\varepsilon_{i,t}+\theta\varepsilon_{i,t-1}$, and the moving average parameter θ is estimated.

Table (7) shows the households' permanent and temporary shocks.

Table 7
Households' Permanent and Temporary Shocks

Year	θ	σ_ξ^2 Variance of Permanent Shock	σ_ξ^2 Variance of Temporary Shock	ϕ	ψ
2010	0.46	2.31	0.061	0.17	0.18
2011	0.038	3.49	0.066		
2012	0.92	3.61	0.076		

Source: Research Findings.

According to the results obtained for the values of food consumption smoothing parameters for temporary and permanent income shocks, in Table 7, ($\varphi = 0.005$) and ($\psi = 0.019$), it can be said that against temporary and permanent shocks of income, there is almost a complete insurance on food expenditure for sample households during the studied period. This result shows the fact that Iranian households are not willing to change their consumption patterns, and on the contrary, they are trying to use less durable and non-food goods than necessary goods to smooth their consumption.

5 Conclusion

This study examined the relationship between temporary and permanent income shocks and food consumption expenditures of households, regarding some social indicators such as education, gender, activity status, marital status and the age of the head of household. To this purpose, using data from households' expenditure and income surveys, which were compiled by the Statistical Center of Iran over the period 2009-2014. The result of regression for households showed that during the studied period, social indicators such as education level, occupation, marriage, age, and urbanization have a positive and significant effect on household income and consumption. Moreover, the parameters of the variance of permanent and temporary income shocks are estimated using the methodology of Blundell et al. (2008) to determine the amount of temporary and permanent income shocks against food expenditure. An important argument of the results of this study can be explained that against temporary and permanent income shocks, there is almost a complete insurance for households on food consumption. In other words, consumption expenditures are remained at relatively constant levels against income fluctuations, or are not related to the current income, but related to the average income which grows over time. Average income is affected by factors such as the increase in education level, urbanization, being married, and employment in which there is a positive correlation with the level of income. Therefore, economic policies that tend to affect the dummy components of the

households mentioned above may increase the consumption and thus help the households' ability to meet their needs from a specific part of the consumer goods called food expenditure. For keeping the level of Iranian household's power purchase, the government should perform the economic policies such as holding down prices of food and the other necessary households' goods. Giving subsidies to food commodities and controlling the inflation in the society can keep the least standard of living level too.

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